FIG. 1

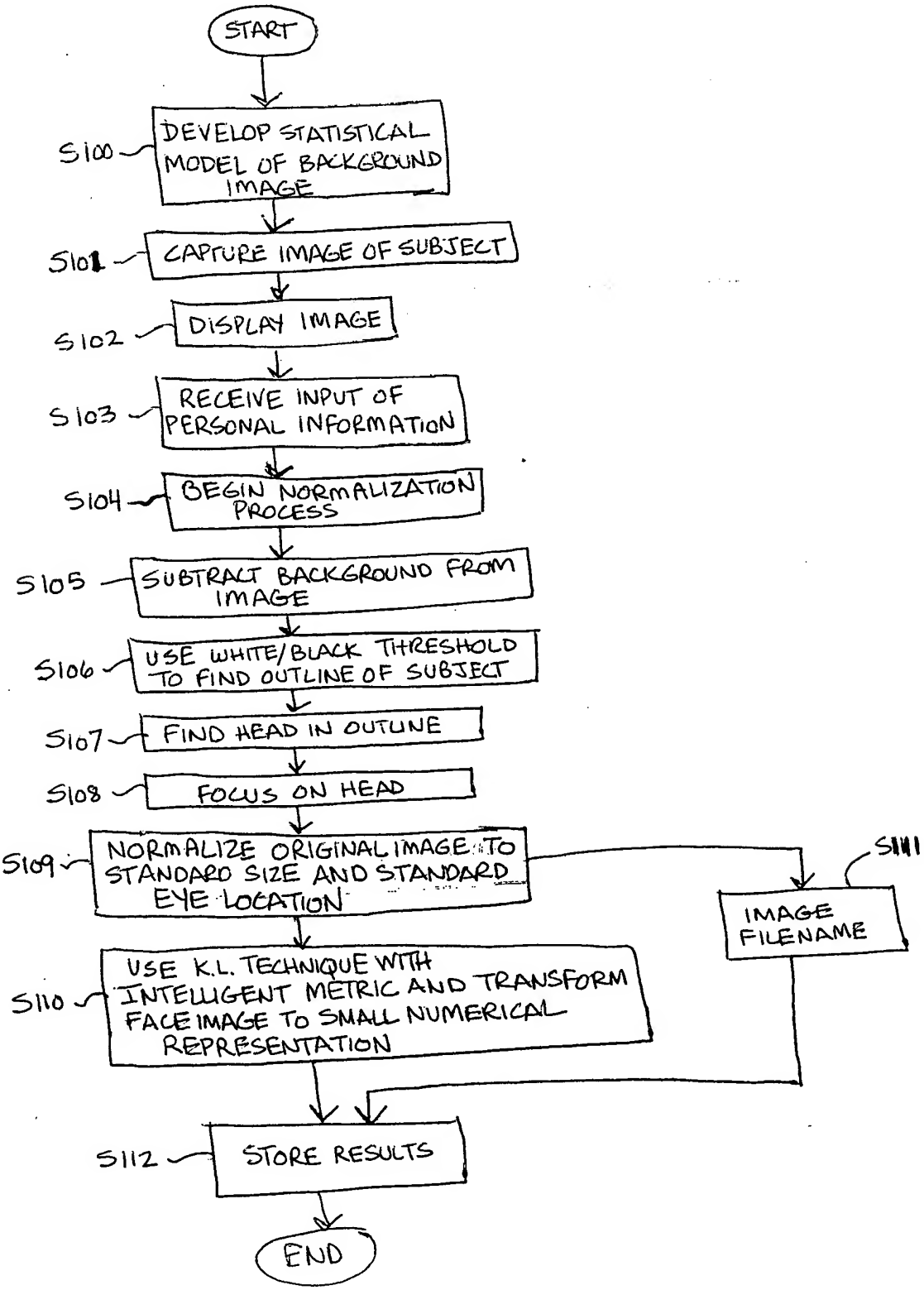

START
S100
DEVELOP STATISTICAL MODEL OF BACKGROUND IMAGE
S101
CAPTURE IMAGE OF SUBJECT
S102
DISPLAY IMAGE
S103
RECEIVE INPUT OF PERSONAL INFORMATION
S104
BEGIN NORMALIZATION PROCESS
S105
SUBTRACT BACKGROUND FROM IMAGE
S106
USE WHITE/BLACK THRESHOLD TO FIND OUTLINE OF SUBJECT
S107
FIND HEAD IN OUTUNE
S108
FOCUS ON HEAD
S109
NORMALIZE ORIGINAL IMAGE TO STANDARD SIZE AND STANDARD EYE LOCATION
S111
IMAGE FILENAME
S110
USE K.L. TECHNIQUE WITH INTELLIGENT METRIC AND TRANSFORM FACE IMAGE TO SMALL NUMERICAL REPRESENTATION
S112
STORE RESULTS
END

FIG. 2

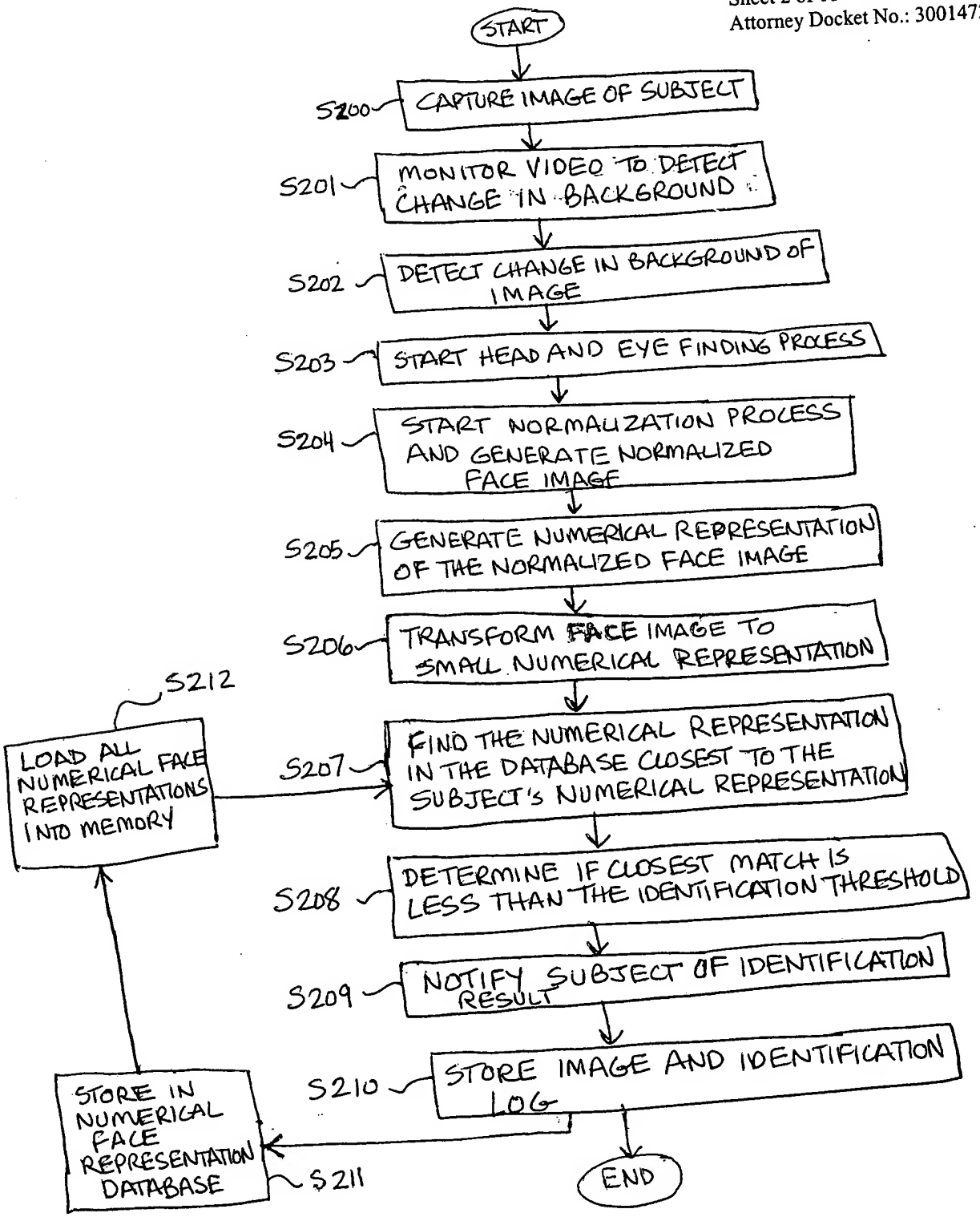

START
S200
CAPTURE IMAGE OF SUBJECT
S201
MONITOR VIDEO TO DETECT CHANGE IN BACKGROUND
S202
DETECT CHANGE IN BACKGROUND OF IMAGE
S203
START HEAD AND EYE FINDING PROCESS
S204
START NORMALIZATION PROCESS AND GENERATE NORMALIZED FACE IMAGE
S205
GENERATE NUMERICAL REPRESENTATION OF THE NORMALIZED FACE IMAGE
S206
TRANSFORM FACE IMAGE TO SMALL NUMERICAL REPRESENTATION
S212
LOAD ALL NUMERICAL FACE REPRESENTATIONS INTO MEMORY
S207
FIND THE NUMERICAL REPRESENTATION IN THE DATABASE CLOSEST TO THE SUBJECT'S NUMERICAL REPRESENTATION
S208
DETERMINE IF CLOSEST MATCH IS LESS THAN THE IDENTIFICATION THRESHOLD
S209
NOTIFY SUBJECT OF IDENTIFICATION RESULT
S210
STORE IMAGE AND IDENTIFICATION LOG
STORE IN NUMERICAL FACE REPRESENTATION DATABASE
S211
END

FIG. 3A

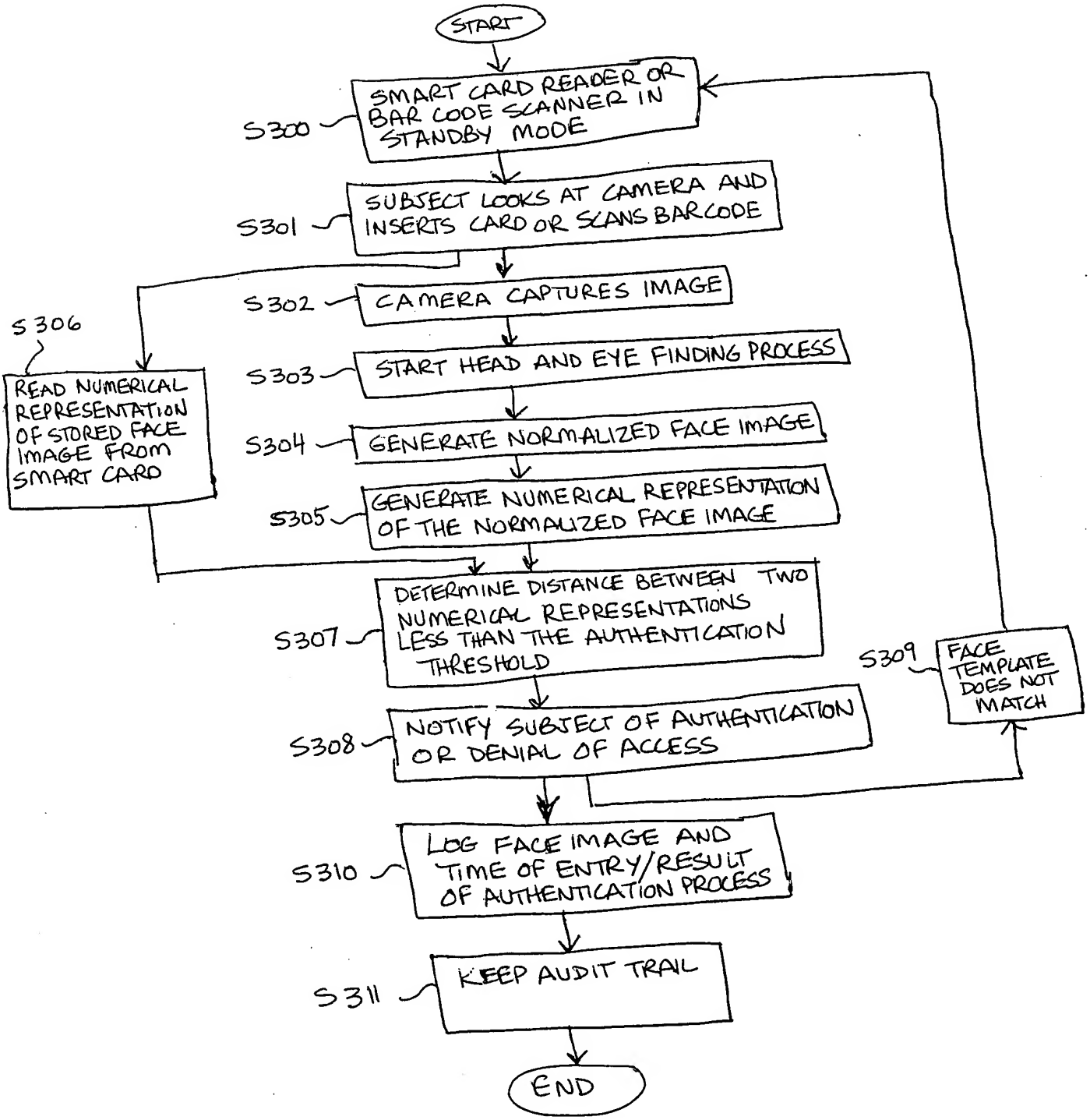

START
S300
SMART CARD READER OR BAR CODE SCANNER IN STANDBY MODE
S301
SUBJECT LOOKS AT CAMERA AND INSERTS CARD OR SCANS BARCODE
S302
CAMERA CAPTURES IMAGE
S303
START HEAD AND EYE FINDING PROCESS
S304
GENERATE NORMALIZED FACE IMAGE
S305
GENERATE NUMERICAL REPRESENTATION OF THE NORMALIZED FACE IMAGE
S306
READ NUMERICAL REPRESENTATION OF STORED FACE IMAGE FROM SMART CARD
S307
DETERMINE DISTANCE BETWEEN TWO NUMERICAL REPRESENTATIONS LESS THAN THE AUTHENTICATION THRESHOLD
S308
NOTIFY SUBJECT OF AUTHENTICATION OR DENIAL OF ACCESS
S309
FACE TEMPLATE DOES NOT MATCH
S310
LOG FACE IMAGE AND TIME OF ENTRY/RESULT OF AUTHENTICATION PROCESS
S311
KEEP AUDIT TRAIL
END

FIG. 3B

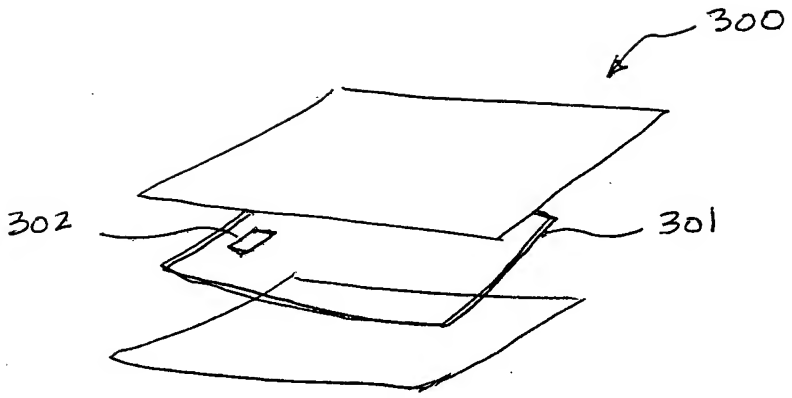


FIG. 4

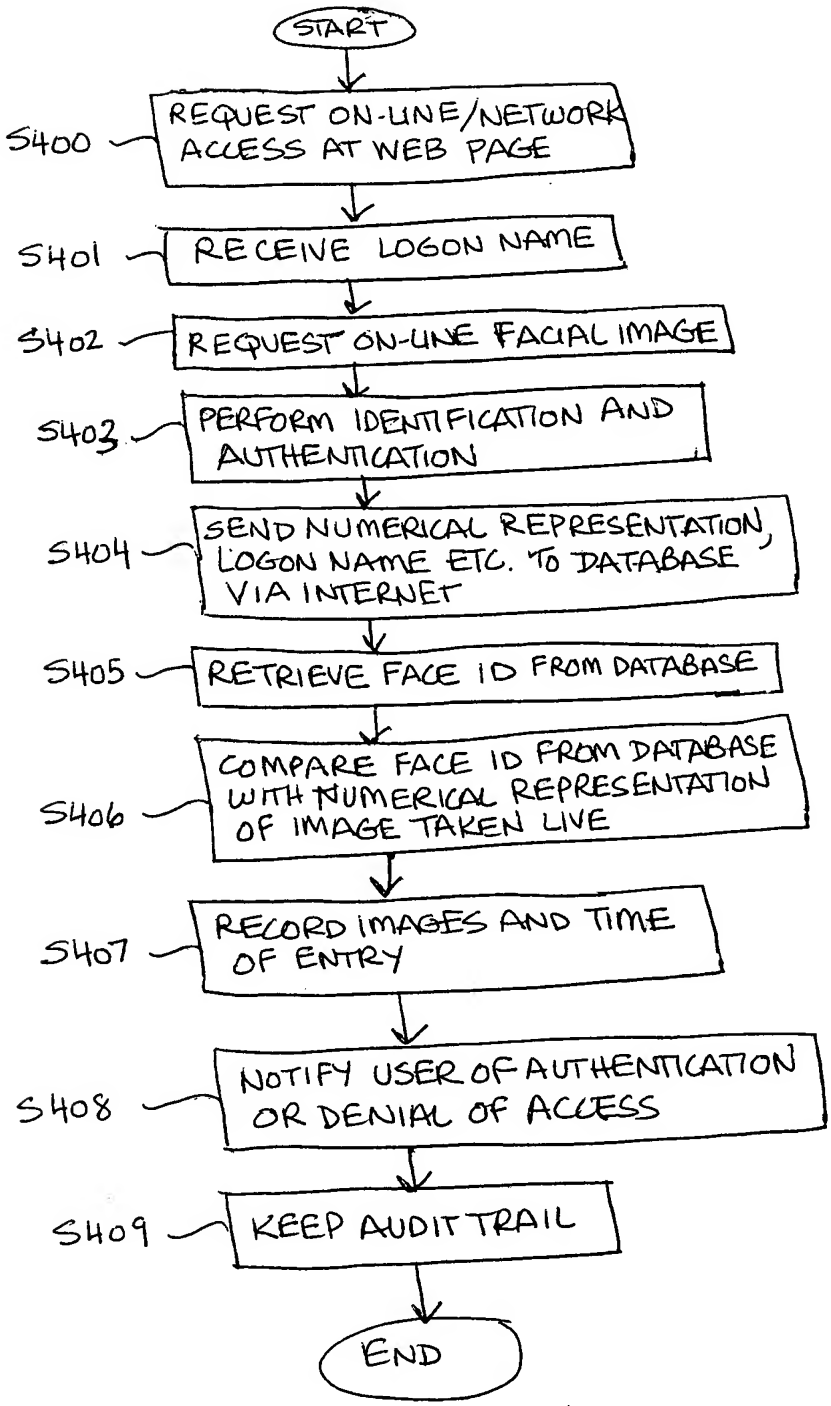

START
S400
REQUEST ON-LINE/NETWORK ACCESS AT WEB PAGE
S401
RECEIVE LOGON NAME
S402
REQUEST ON-LINE FACIAL IMAGE
S403
PERFORM IDENTIFICATION AND AUTHENTICATION
S404
SEND NUMERICAL REPRESENTATION, LOGON NAME ETC. TO DATABASE VIA INTERNET
S405
RETRIEVE FACE ID FROM DATABASE
S406
COMPARE FACE ID FROM DATABASE WITH NUMERICAL REPRESENTATION OF IMAGE TAKEN LIVE
S407
RECORD IMAGES AND TIME OF ENTRY
S408
NOTIFY USER OF AUTHENTICATION OR DENIAL OF ACCESS
S409
KEEP AUDIT TRAIL
END

FIG. 5

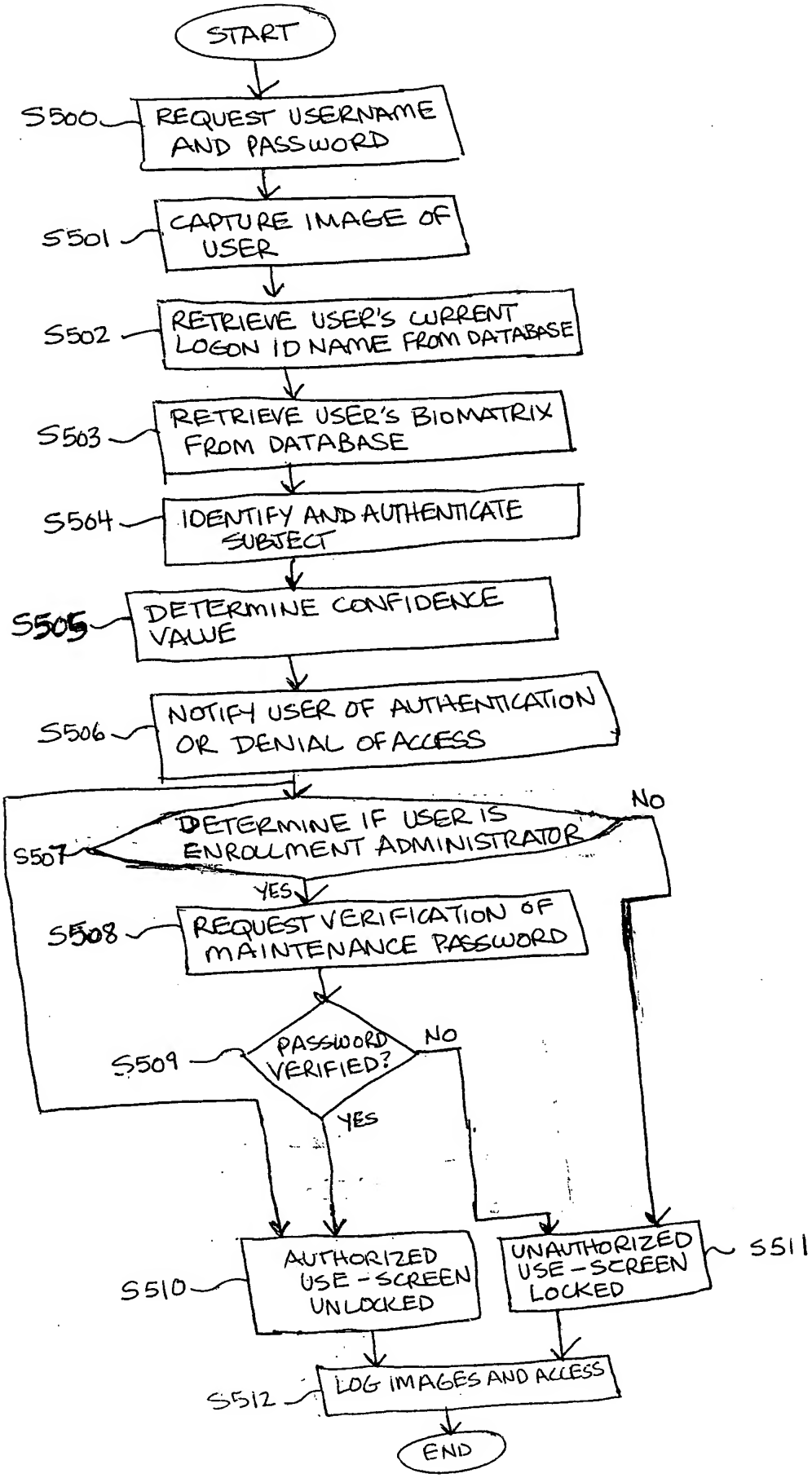

START
S500
REQUEST USERNAME AND PASSWORD
S501
CAPTURE IMAGE OF USER
S502
RETRIEVE USER'S CURRENT LOGON ID NAME FROM DATABASE
S503
RETRIEVE USER'S BIOMATRIX FROM DATABASE
S504
IDENTIFY AND AUTHENTICATE SUBJECT
S505
DETERMINE CONFIDENCE VALUE
S506
NOTIFY USER OF AUTHENTICATION OR DENIAL OF ACCESS
S507
DETERMINE IF USER IS ENROLLMENT ADMINISTRATOR
No
YES
S508
REQUEST VERIFICATION OF MAINTENANCE PASSWORD
S509
PASSWORD VERIFIED?
NO
YES
S510
AUTHORIZED USE - SCREEN UNLOCKED
S511
UNAUTHORIZED USE - SCREEN LOCKED
S512
LOG IMAGES AND ACCESS
END

FIG. 6A

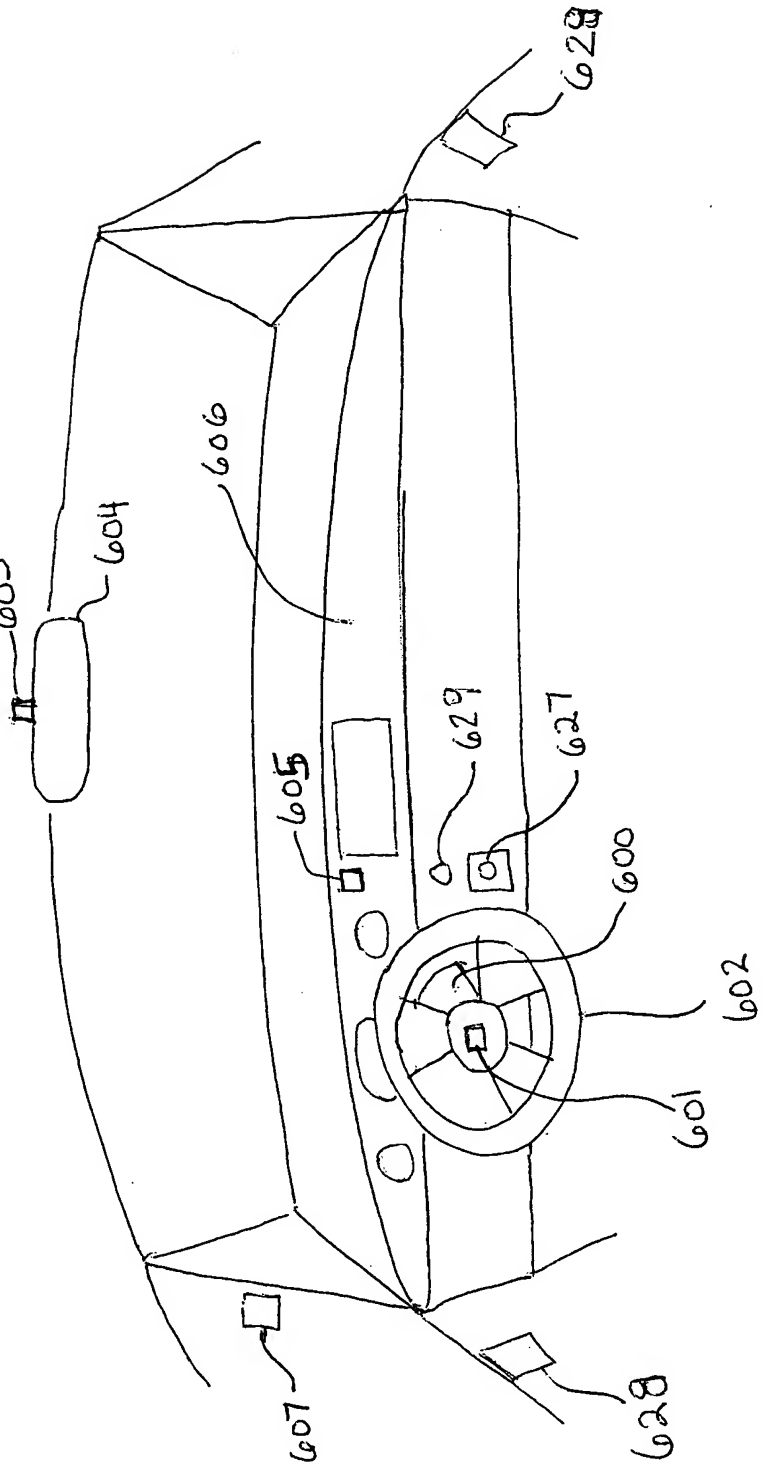


FIG. 6B

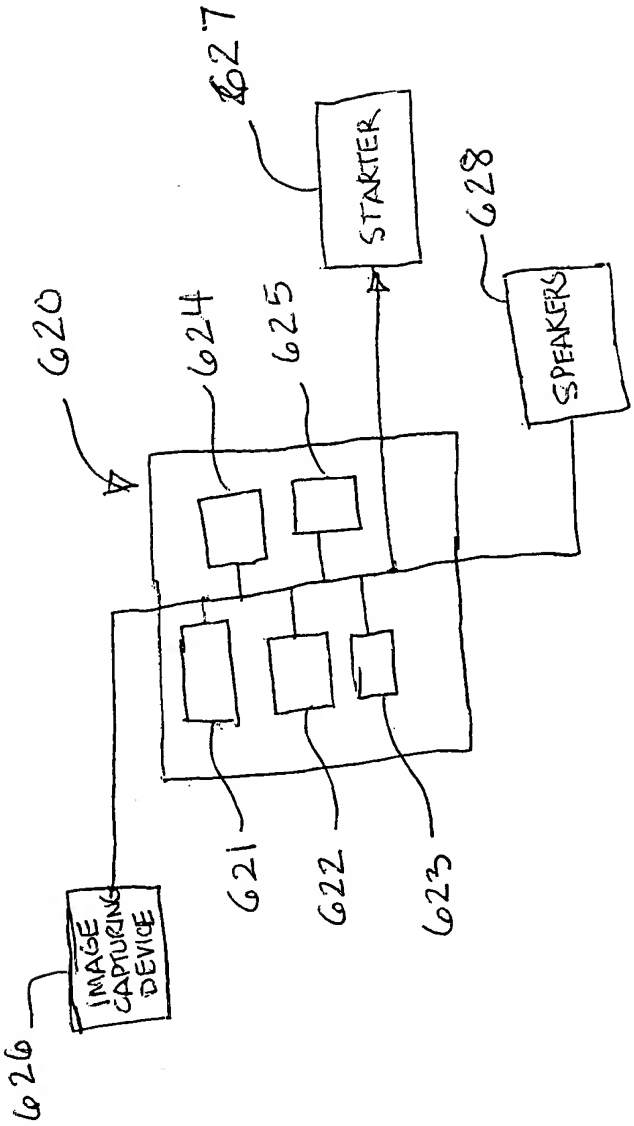

627
STARTER
628
SPEAKERS
620
624
625
621
622
623
IMAGE CAPTURING DEVICE
626

FIG. 7

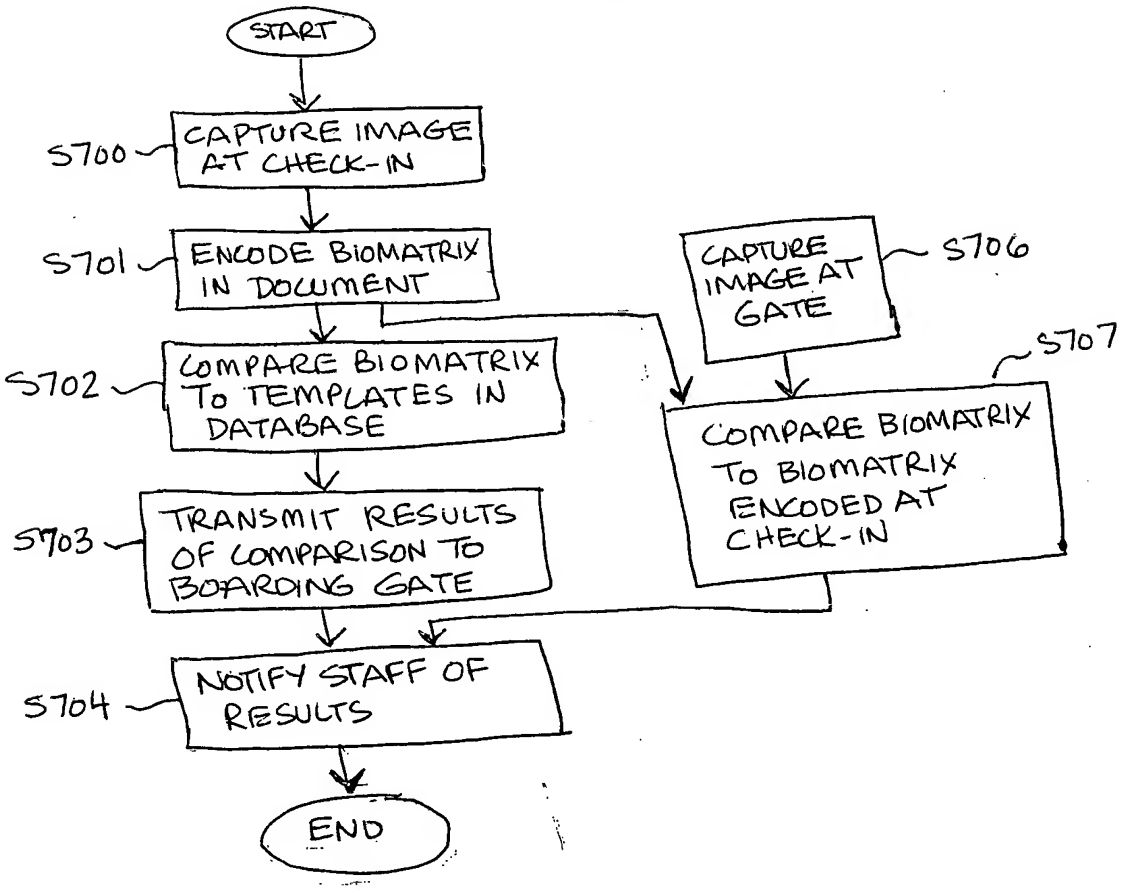

START
S700
CAPTURE IMAGE AT CHECK-IN
S701
ENCODE BIOMATRIX IN DOCUMENT
S702
COMPARE BIOMATRIX TO TEMPLATES IN DATABASE
S703
TRANSMIT RESULTS OF COMPARISON TO BOARDING GATE
S704
NOTIFY STAFF OF RESULTS
END
S706
CAPTURE IMAGE AT GATE
S707
COMPARE BIOMATRIX TO BIOMATRIX ENCODED AT CHECK-IN

FIG. 8

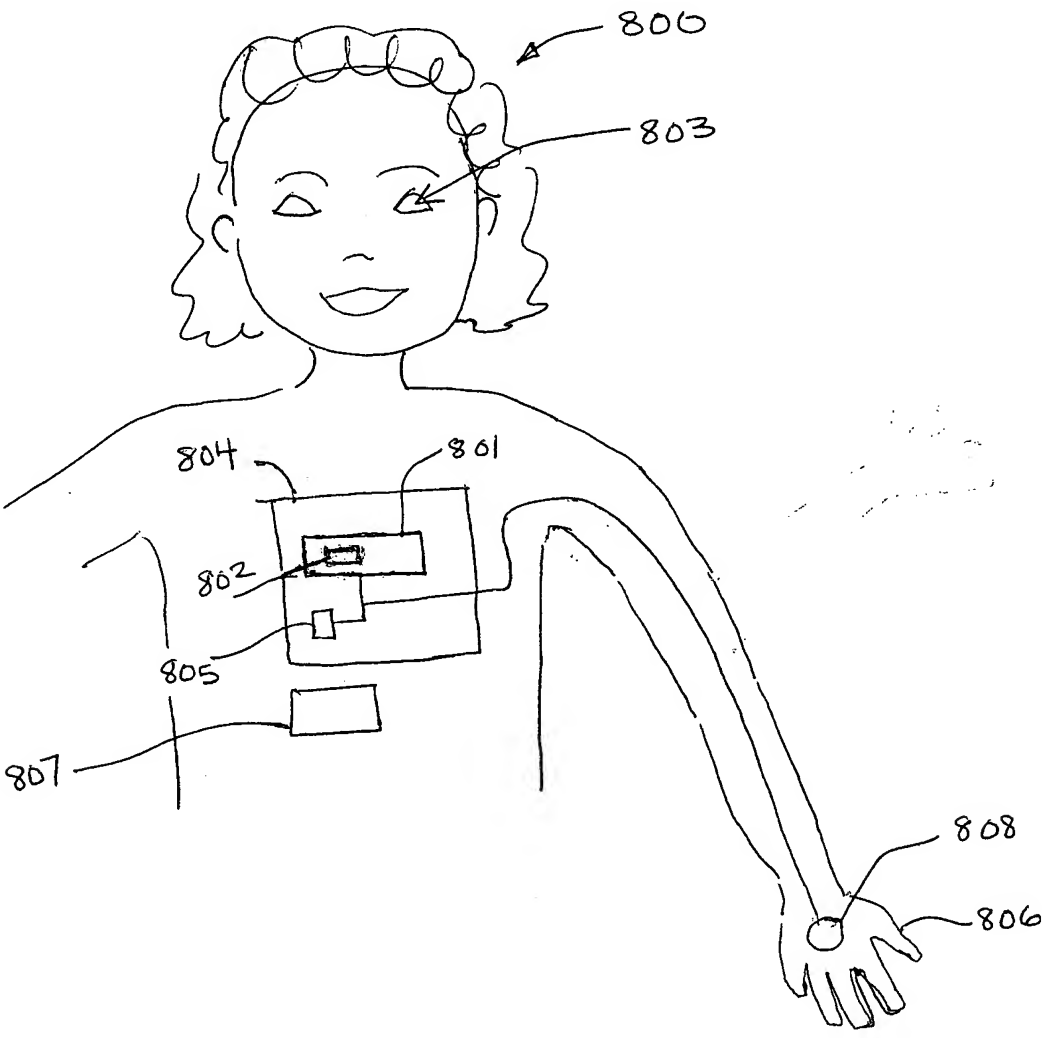
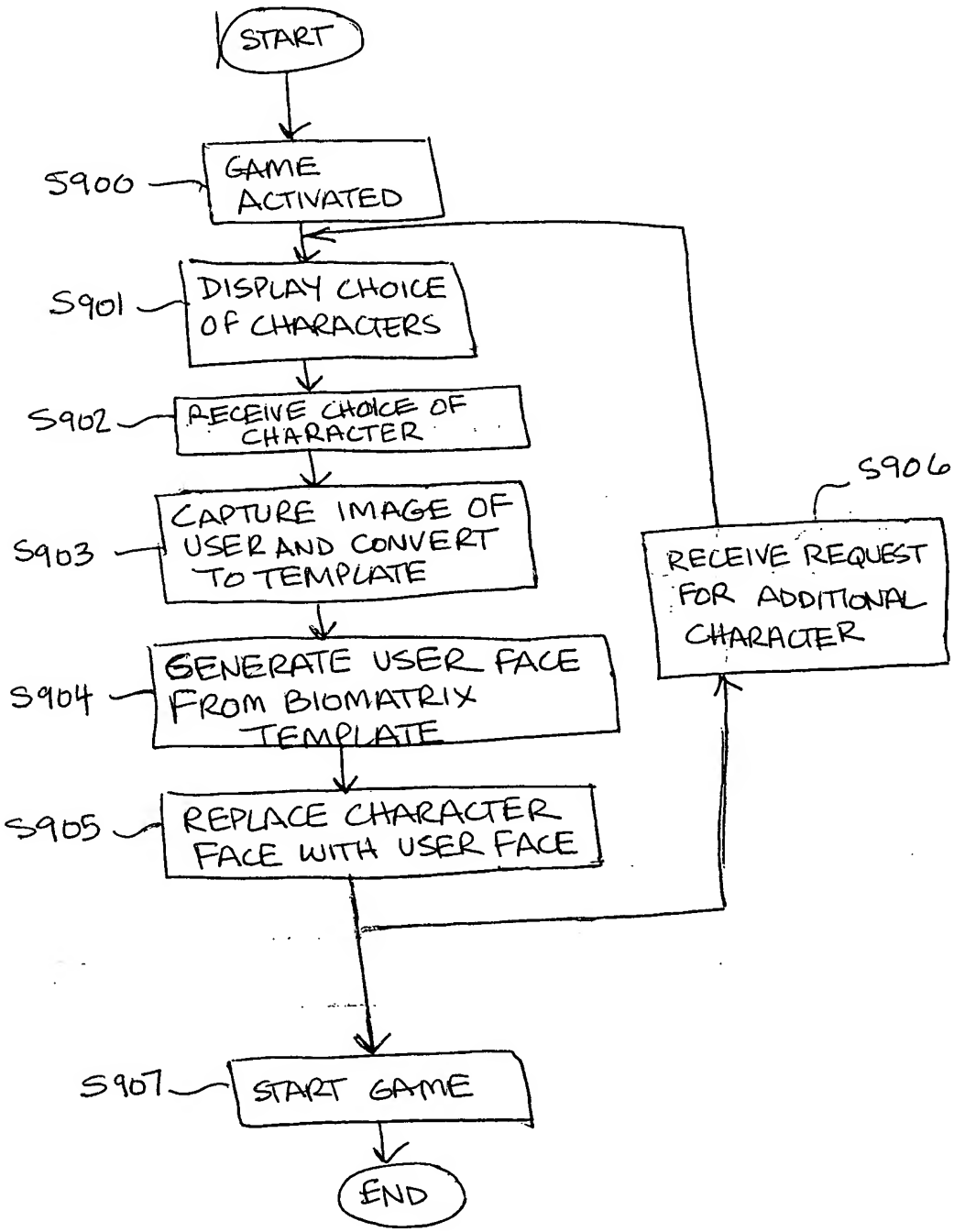


FIG. 9


START
S900
GAME ACTIVATED
S901
DISPLAY CHOICE OF CHARACTERS
S902
RECEIVE CHOICE OF CHARACTER
S903
CAPTURE IMAGE OF USER AND CONVERT TO TEMPLATE
S904
GENERATE USER FACE FROM BIOMATRIX TEMPLATE
S905
REPLACE CHARACTER FACE WITH USER FACE
S906
RECEIVE REQUEST FOR ADDITIONAL CHARACTER
S907
START GAME
END